

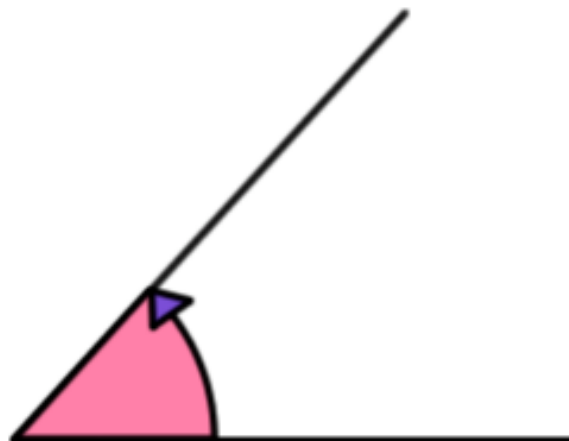
- I can name and classify angles.
- I can measure and construct angles and angle bisectors.

### Common Core

- **CC.9-12.G.CO.12** Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometry software, etc.).
- **CC.9-12.G.CO.1** Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

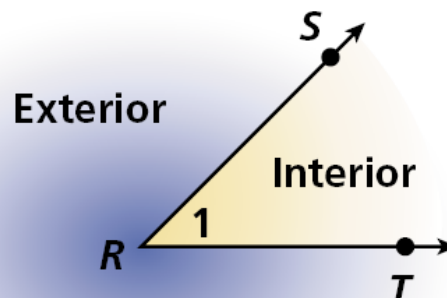
A transit is a tool for measuring angles. It consists of a telescope that swivels horizontally and vertically. Using a transit, a surveyor can measure the *angle* formed by his or her location and two distant points.

An **angle** is a figure formed by two rays, or sides, with a common endpoint called the **vertex** (plural: *vertices*). You can name an angle several ways: by its vertex, by a point on each ray and the vertex, or by a number.



The set of all points between the sides of the angle is the **interior of an angle**. The **exterior of an angle** is the set of all points outside the angle.

**Angle Name**  
 $\angle R$ ,  $\angle SRT$ ,  $\angle TRS$ , or  $\angle 1$



You cannot name an angle just by its vertex if the point is the vertex of more than one angle. In this case, you must use all three points to name the angle, and the middle point is always the vertex.

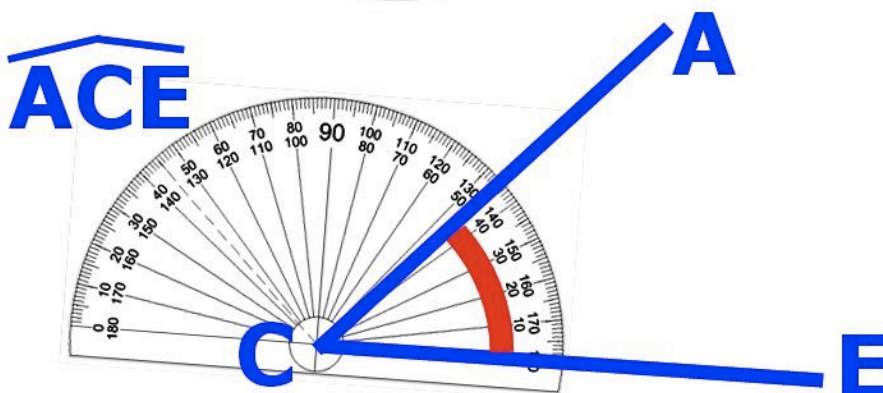
Refer to example 1 on page 20.

1. How do you measure an angle?

**Postulate 1-3-1** **Protractor Postulate**

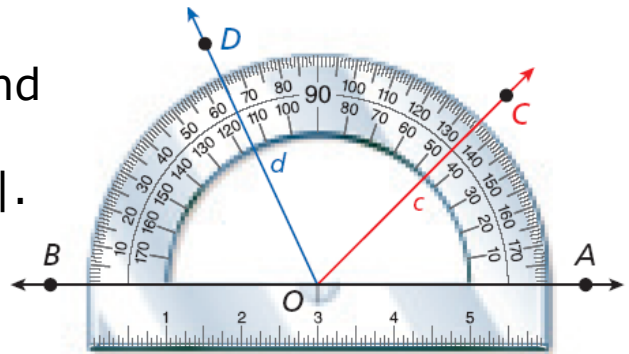
Given  $\overrightarrow{AB}$  and a point  $O$  on  $\overrightarrow{AB}$ , all rays that can be drawn from  $O$  can be put into a one-to-one correspondence with the real numbers from 0 to 180.

# Angles



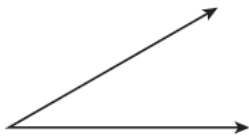
You can use the Protractor Postulate to help you classify angles by their measure. The measure of an angle is the absolute value of the difference of the real numbers that the rays correspond with on a protractor.

If  $\overrightarrow{OC}$  corresponds with  $c$  and  $\overrightarrow{OD}$  corresponds with  $d$ ,  
 $m\angle DOC = |d - c|$  or  $|c - d|$ .



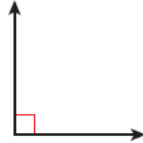
### Types of Angles

#### Acute Angle



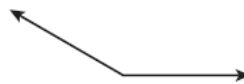
Measures greater than  $0^\circ$  and less than  $90^\circ$

#### Right Angle



Measures  $90^\circ$

#### Obtuse Angle



Measures greater than  $90^\circ$  and less than  $180^\circ$

#### Straight Angle

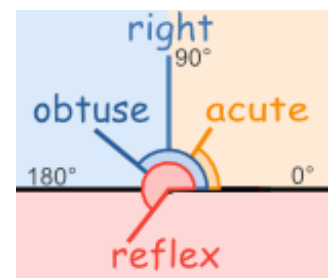


Formed by two opposite rays and measures  $180^\circ$

Refer to example on page 21.

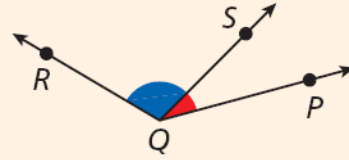
2. What are congruent angles?

3. In a diagram, how do you show two angles are congruent?



**Postulate 1-3-2** Angle Addition Postulate

If  $S$  is in the interior of  $\angle PQR$ , then  
 $m\angle PQS + m\angle SQR = m\angle PQR$ .  
( $\angle$  Add. Post.)



Refer to example 3 on page 22.

4. What is an angle bisector?

Sketchpad: Constructing an angle bisector.

Refer to example 4 on page 23.

1.3 Assignment: (p 25) 11, 12, 16, 18, 20, 26, 30.

